

What is claimed is:

1. A method for processing a sample, comprising the steps of:

supplying a process gas to a processing chamber;
generating plasma using a plasma generator; and
processing the sample placed on a platform using the plasma;

wherein, in the sample processing step, a space in the processing chamber except for a space defined between electrodes of the plasma generator or a portion above the platform in which the plasma is generated is irradiated with laser light for scanning;

wherein scattered light from contaminants present in the processing chamber is detected; and

wherein the contaminants are detected based on the detected scattered light.

2. The method according to claim 1, wherein the space irradiated with the laser light for scanning is a space defined between the processing chamber and the exhaust passage.

3. The method according to claim 2, wherein the laser scanning is performed in such a manner that a scanned surface is orthogonal to a direction of exhaust along which the gas or the contaminants flow from the processing

chamber to the exhaust passage.

4. The method according to claim 1, wherein the laser light is emitted from a position which is not orthogonal to an inner wall of the processing chamber to be irradiated with the laser light.

5. An apparatus for processing a sample, comprising:
a processing chamber provided with a platform on which the sample is placed, the processing chamber being provided with a measurement window formed on a wall surface;

evacuation means for evacuating the processing chamber;

gas injector for injecting a gas into the processing chamber;

a plasma generator for generating plasma in the processing chamber after the processing chamber has been evacuated by the use of the evacuation means and the gas has been injected into the processing chamber by the use of the gas injector; and

a particle detector for detecting scattered light generated from contaminants present in the processing chamber by irradiating and scanning, with laser light, a space which is defined in the processing chamber but is outside a region where the plasma is generated via the measurement window during processing the sample placed on

the platform with the plasma generated in the processing chamber by the use of the plasma generator.

6. The apparatus according to claim 5, wherein the measurement window is provided in a space defined between the processing chamber and an exhaust passage.

7. The apparatus according to claim 6, wherein the laser scanning is performed by the particle detector in such a manner that a scanned surface is orthogonal to a direction of exhaust along which the gas or the contaminants flow from the processing chamber to the exhaust passage.

8. A plasma processing apparatus control system comprising:

a plasma processing apparatus including a platform on which a sample is placed, a plasma generator, and a measurement window formed on a wall surface, the apparatus processing the sample placed on the platform with the plasma generated by the plasma generator;

a particle detector for detecting scattered light generated from contaminants present in the plasma processing apparatus by irradiating and scanning, with laser light, a space which is defined in the processing apparatus but is outside a region where the plasma is generated via the measurement window of the processing apparatus during the plasma processing on the sample by the

processing apparatus; and

a controller for receiving a signal output from the processing apparatus and a detection signal from the particle detector to control the processing apparatus and contaminant data.

9. The plasma processing apparatus control system according to claim 8, wherein the controller compares the output signal from the processing apparatus with a timing of the contaminant detection by the particle detector to identify a contaminant source in the processing apparatus.

10. The plasma processing apparatus control system according to claim 8, wherein the controller controls contaminants depending on signal intensity of the scattered light and the number of scattered light generations from the contaminants detected by the particle detector, and instructs a maintenance timing and a maintenance method depending on the signal intensity of the scattered light and the number of scattered light generations.